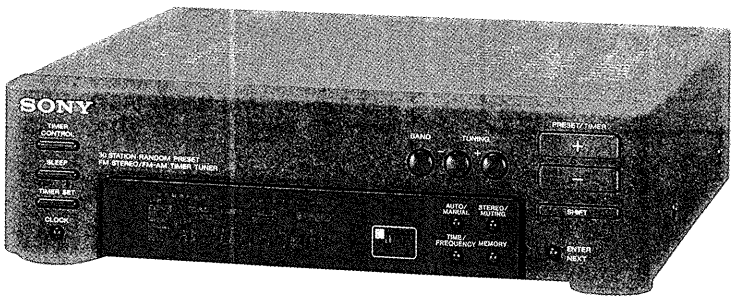
ST-H300

SERVICE MANUAL

AEP Model
UK Model



This set is the tuner section in MHC-3500.

SPECIFICATIONS

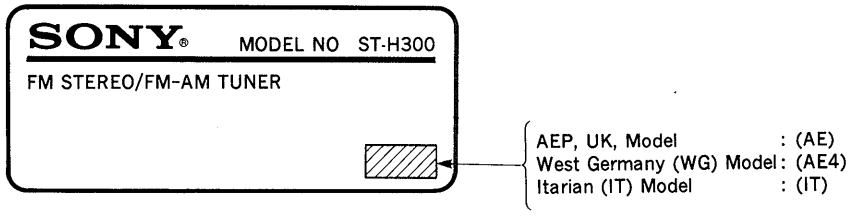
System	FM stereo, FM/AM superheterodyne tuner
FM tuner section	
Tuning range	87.5 – 108 MHz
Antenna	Telescopic antenna
Antenna terminals	75 ohms unbalanced
Intermediate frequency	10.7 MHz
AM tuner section	
Tuning range	MW: 522 – 1,611 kHz, LW 144 – 288 kHz (Italian model) MW: 531 – 1,602 kHz, LW: 153 – 279 kHz (except Italian model)
Antenna	AM loop antenna, External antenna terminals
Intermediate frequency	450 kHz

FM-AM TIMER TUNER

SONY®

MODEL IDENTIFICATION

—Model Number Label—



- **Power supply for service**

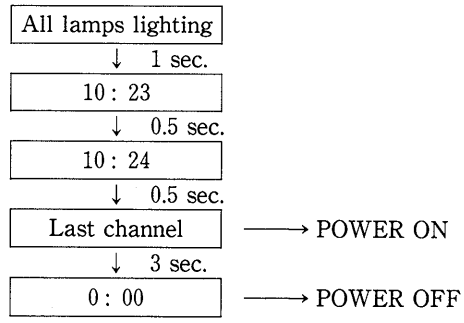
Since this machine has no power source in itself, the power is supplied form AMP TA-H300 used for this series. As shown in the following table, this machine requires 4types of voltage, and supplying each type of voltage separately makes complicated connections.

Accordingly, make connection with TA-H300 at time of service, such as electrifying repair.

AC 3.9V	FL-tube filament voltage
DC −24V	Display controller IC701, grid voltage
DC 5V	Display controller IC701, V_{CC}
DC 13V	PLL control voltage

- **Service mode for checking the timer ON/OFF**

1) Connect with AMP TA-H300 and set the power switch of TA-H300 to the state of STANDBY.
2) Set the time of tuner to a proper time (any time).
3) Press 3 switches simultaneously, namely, TUNING −, SHIFT and ENTER.
4) FL-tube display



5) End

—Caution for Service—

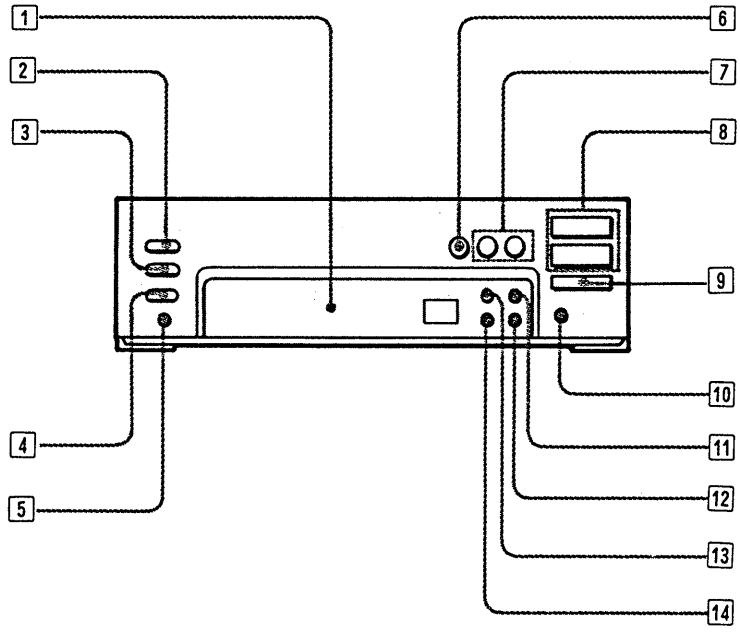
- **Reset of IC701**

The display controller IC701 is reset by short-circuiting both edges of C702 (0.47μF) while power OFF and discharging electricity.
After resetting, the following frequencies are pre-set to the memory.
When the repair is completed, return the memory to the preceding state (content).

FM		AM/MW				LW			
		AEP, UK modol		WG, Italian model		AEP, UK model		WG, Italian model	
A1	87.5 MHz	A6	531 kHz	A6	522 kHz	B1	153 kHz	B1	144 kHz
A2	88.0 MHz	A7	603 kHz	A7	603 kHz	B2	171 kHz	B2	162 kHz
A3	98.0 MHz	A8	999 kHz	A8	999 kHz	B3	216 kHz	B3	216 kHz
A4	100.0 MHz	A9	1404 kHz	A9	1404 kHz	B4	261 kHz	B4	270 kHz
A5	108.0 MHz	A0	1602 kHz	A0	1611 kHz	B5	281 kHz	B5	288 kHz

SECTION 1
GENERAL

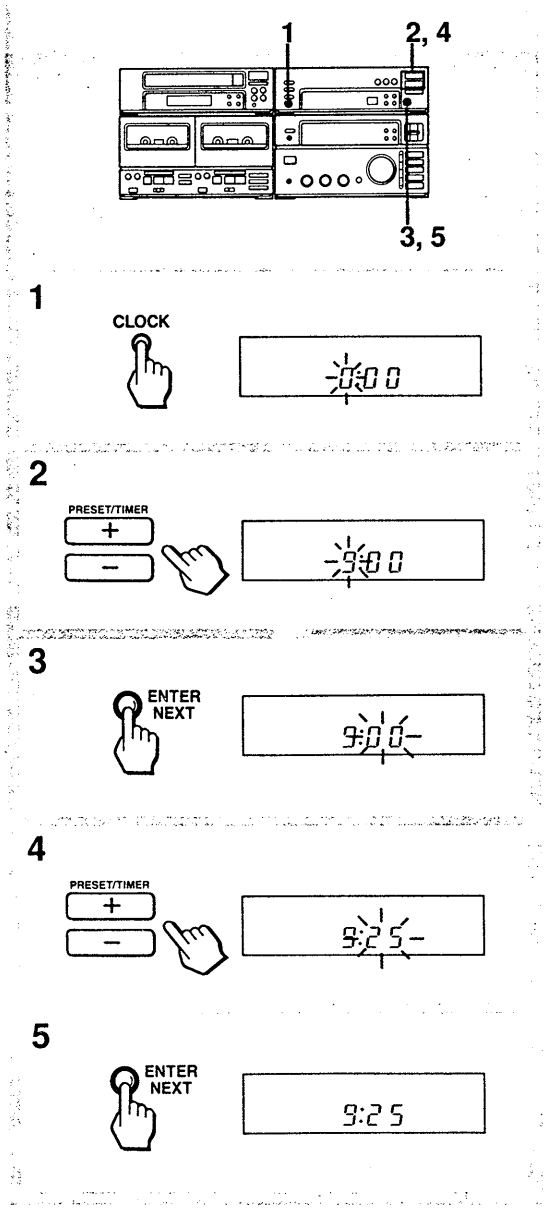
1-1. PARTS IDENTIFICATION



Tuner Section

1. Display window
2. TIMER CONTROL button
3. SLEEP timer button
4. TIMER SET button
5. CLOCK button
6. BAND selector
7. TUNING/–/+ buttons
8. PRESET/TIMER –/+ buttons.
9. SHIFT (memory page select) button
10. ENTER/NEXT button
11. STEREO/MUTING button
12. MEMORY button
13. AUTO/MANUAL tuning button
14. TIME/FREQUENCY button
15. Remote control sensor

1-2. CLOCK SETTING



Setting the Clock

Example: Set to 9:25 in the morning.

1 **Press CLOCK.**

2 **Set the hour with PRESET/TIMER +/- buttons**

3 **Press ENTER/NEXT.**

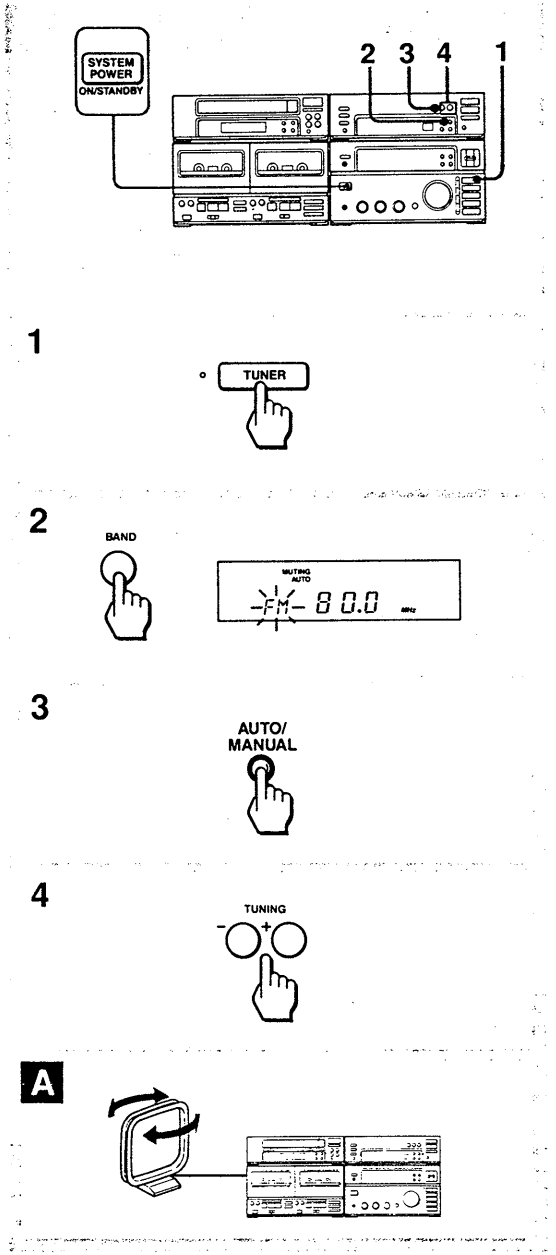
4 **Set the minute with PRESET/TIMER +/– buttons.**

5 **Press ENTER/NEXT.**
The clock starts operating.

When a power interruption occurs
The time will blink and the clock will be behind by the length of time of the power interruption. After the power is restored, the display must be reset to the proper time. (Timer setting is not cancelled by power interruption.)

To change the frequency display into the time display
Press TIME/FREQUENCY. Each time you press TIME/FREQUENCY, the display changes.

1-3. RADIO



The automatic tuning allows you to receive stations whose signal is strong enough. When the signal is too weak, use the manual tuning.

Tuning in Automatically

1 **Press TUNER.**

2 **Press BAND repeatedly until the desired band appears.**
As you press BAND, the band changes as follows: FM → MW → LW

3 **Press AUTO/MANUAL.**
Make sure that AUTO appears in the display.

4 **Tune in to the station with TUNING + or –.**

5 **For receiving FM stations with the stereo effect, press STEREO/MUTING so that MUTING appears.**

Tuning in Manually

1 **Press TUNER.**

2 **Select band by pressing BAND.**

3 **Press AUTO/MANUAL so that AUTO disappears from the display.**

4 **Tune in to the station with TUNING + or –.**

Indicator on the display

TUNED: Appears when a station of sufficient signal strength is tuned in.
STEREO: Appears when an FM stereo program of sufficient signal strength is received.

When an FM stereo program is noisy or hard to receive

Press STEREO/MUTING so that MUTING disappears from the display.
There will be no stereo effect, but the reception will be improved. Press again to restore the stereo effect.

Antenna adjustment A

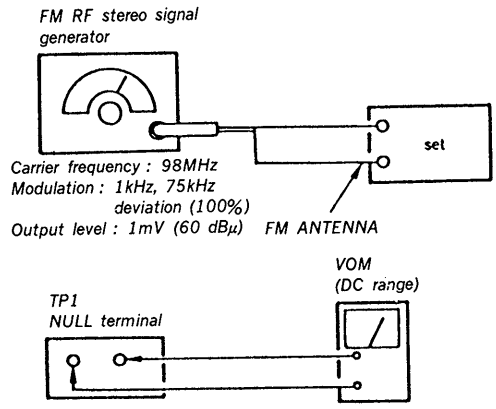
For MW and LW reception, find the best location for the AM loop antenna.

SECTION 2
ELECTRICAL ADJUSTMENTS

FM SECTION

• FM Discriminator Alignment (NULL check)

Setting :



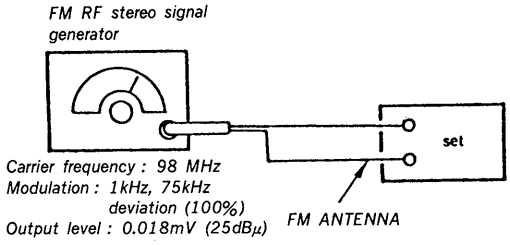
Procedure :

1. Tune the set to 98 MHz.
2. Adjust T21 for 0 V reading on the VOM.

Note : FM TUNING LEVEL adjustment should be made after FM discriminator alignment.

• FM TUNING LEVEL Adjustment

Setting :

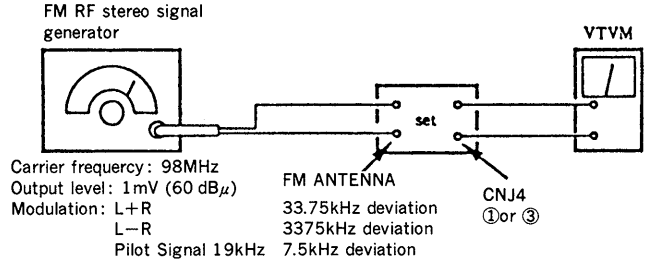

FM RF stereo signal generator
set
Carrier frequency : 98 MHz
Modulation : 1kHz, 75kHz deviation (100%)
Output level : 0.018mV (25dBμ)
FM ANTENNA

Procedure :

1. Tune the set to 98 MHz.
2. Adjust RV24 so that the TUNED LED goes on.

• FM Stereo Separation Adjustment

Setting :



Procedure :

Tune the set to 98 MHz

FM stereo Signal generator Output channel	VTVM connection	VTVM reading (dB)
L-CH	L-CH	Ⓐ
R-CH	L-CH	Ⓑ Adjust RV21 for minimum reading.
R-CH	R-CH	Ⓒ
L-CH	R-CH	Ⓓ Adjust RV21 for minimum reading.

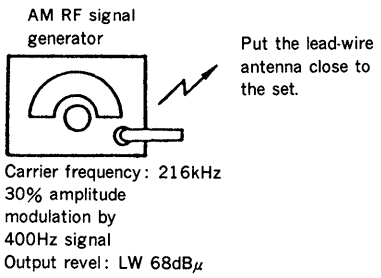
L-CH Stereo separation : Ⓐ—Ⓑ
R-CH Stereo separation : Ⓒ—Ⓓ

The separations of both channels should be equal.

AM SECTION

• AM TUNING LEVEL Adjustment

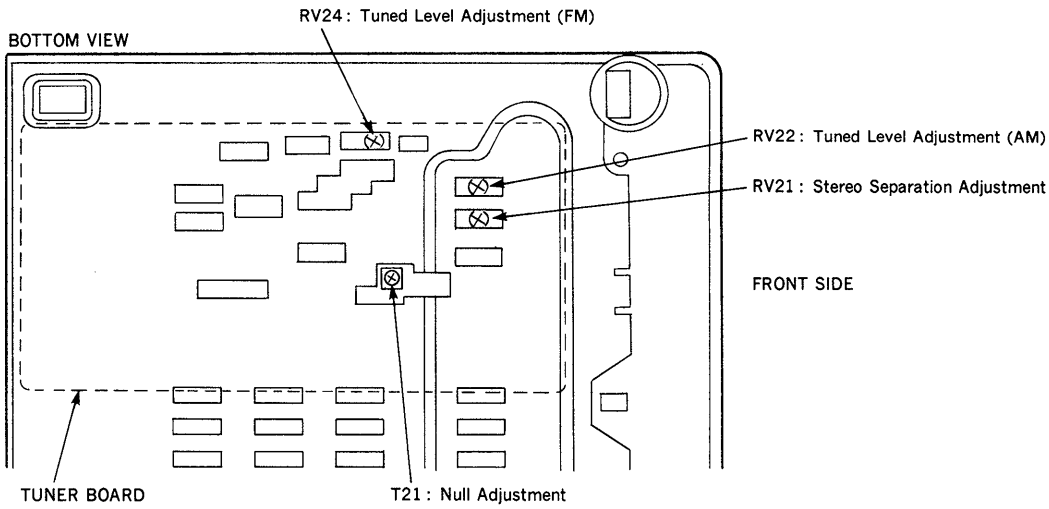
Setting :


AM RF signal generator
Put the lead-wire antenna close to the set.
Carrier frequency : 216kHz
30% amplitude modulation by 400Hz signal
Output revel : LW 68dBμ

Procedure :

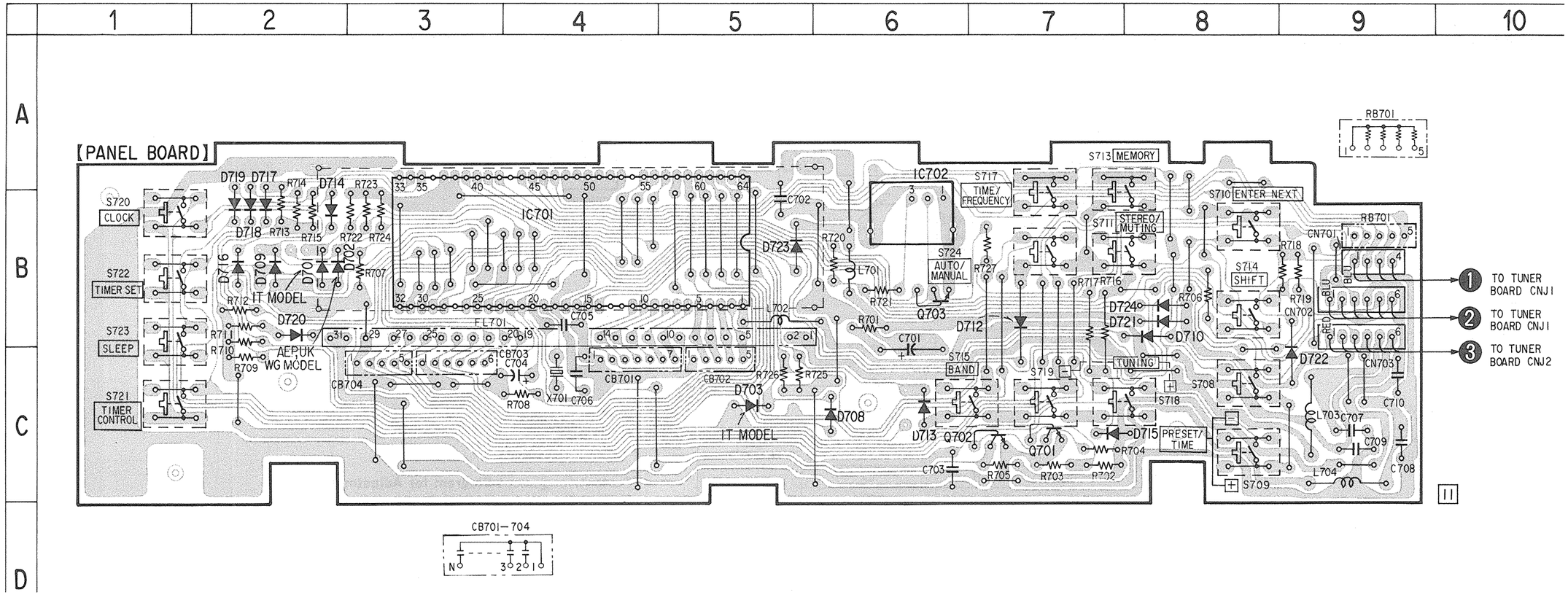
1. Tune the set to 216 kHz.
2. Adjust the RV22 so that the TUNED LED goes on.

[Parts Arrangement Diagram for Adjustments]



SECTION 3
DIAGRAMS

3-1. PRINTED WIRING BOARD—PANEL SECTION—



• Semiconductor Location

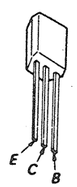
Ref. No.	Location
D701	B-2
D702	B-2
D703	C-5
D708	C-6
D709	B-2
D710	B-8
D712	B-7
D713	C-6
D714	B-2
D715	C-6
D716	B-2
D717	B-2
D718	B-2
D719	B-2
D720	B-2
D721	B-8
D722	C-9
D723	B-5
D724	B-8
IC701	B-4
IC702	B-6
Q701	C-1
Q702	C-7
Q703	B-6

Note:

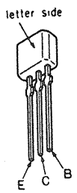
- ○—— : parts extracted from the component side.
- WG: West Germany Model
- IT: Itarian Model

3-2. SEMICONDUCTOR LEAD LAYOUTS

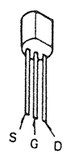
DTA114ES
DTC114ES
DTC144ES
2SC1317-SU
2SC2669-0Y
2SC3113-AB
2SC3330-T



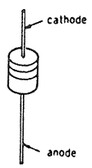
2SC2785-HFE



2SK246-GR3

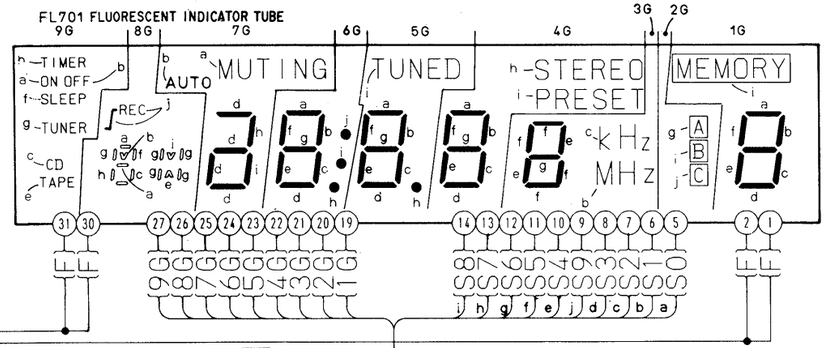


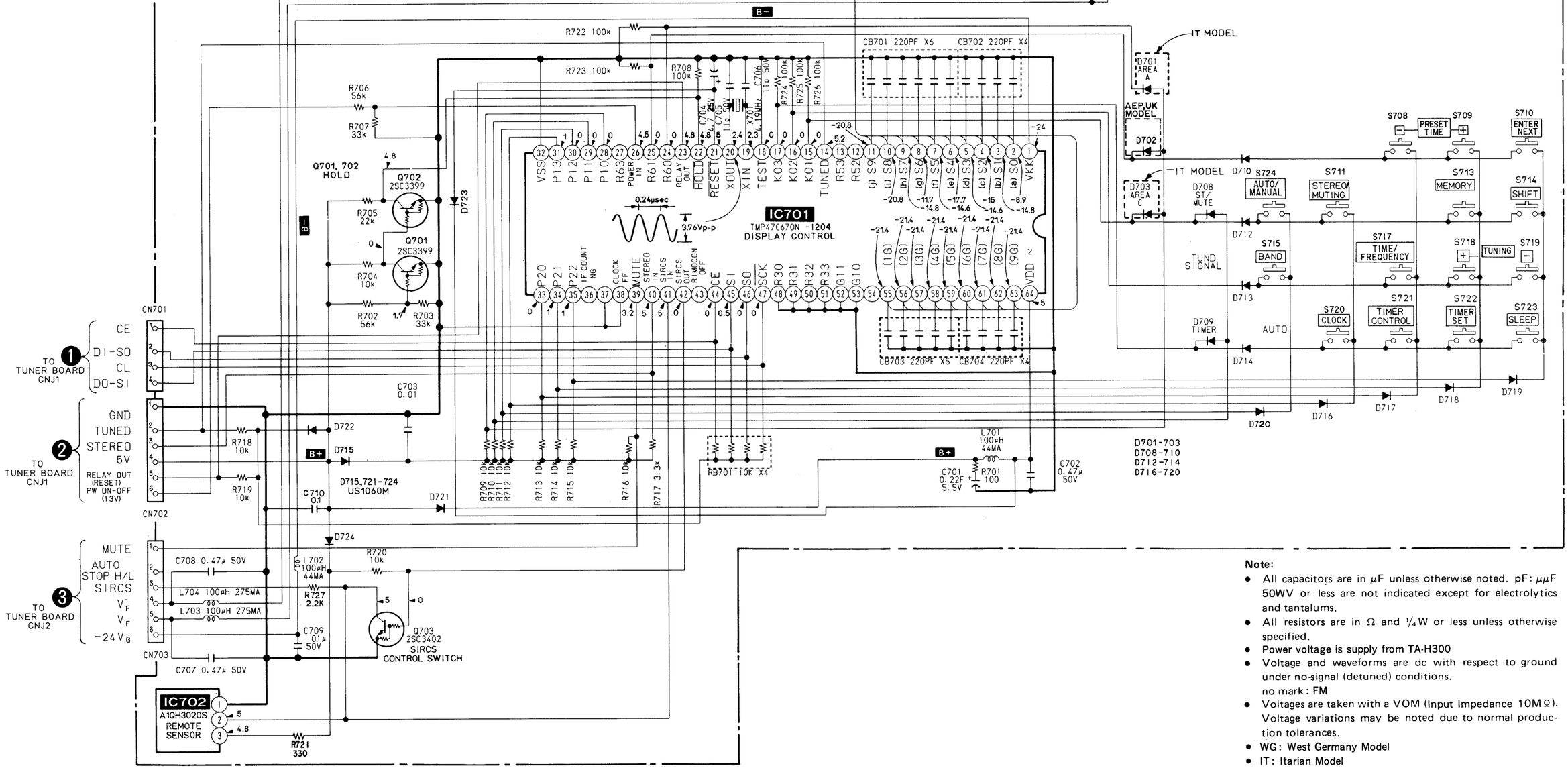
1SS120



【PANEL BOARD】

FL701 FLUORESCENT INDICATOR TUBE



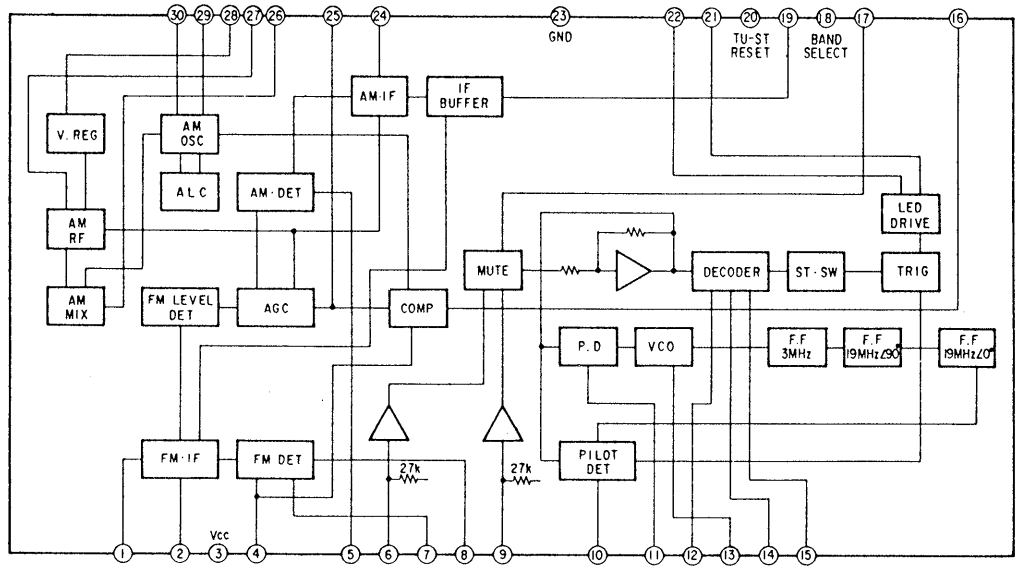


Note:

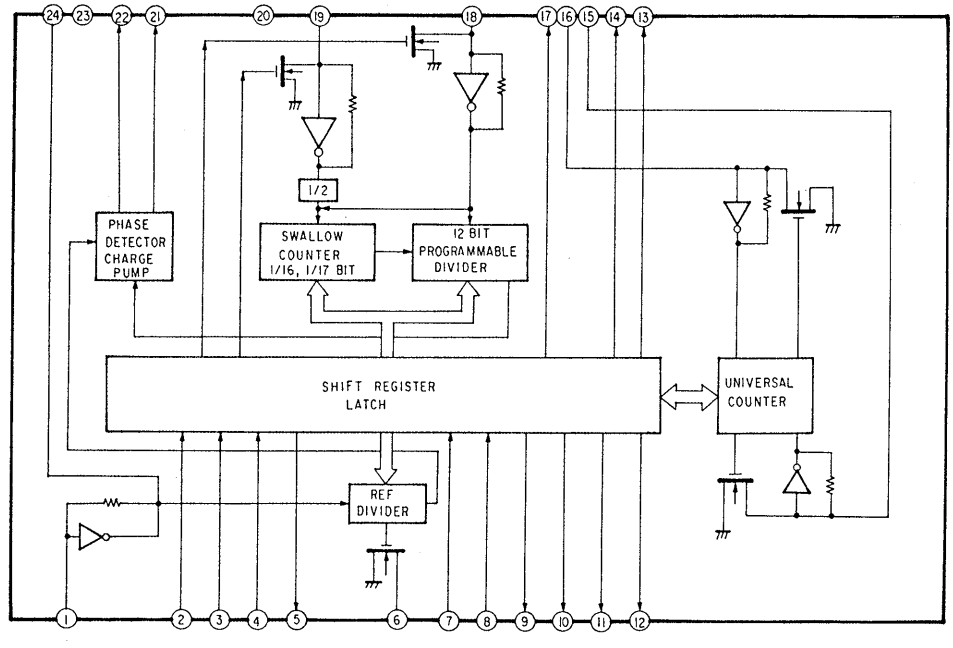
- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4W or less unless otherwise specified.
- Power voltage is supply from TA-H300
- Voltage and waveforms are dc with respect to ground under no-signal (detuned) conditions.
  no mark: FM
- Voltages are taken with a VOM (Input Impedance 10MΩ). Voltage variations may be noted due to normal production tolerances.
- WG: West Germany Model
- IT: Itarian Model

• IC Block Diagrams

IC21 LA1858N

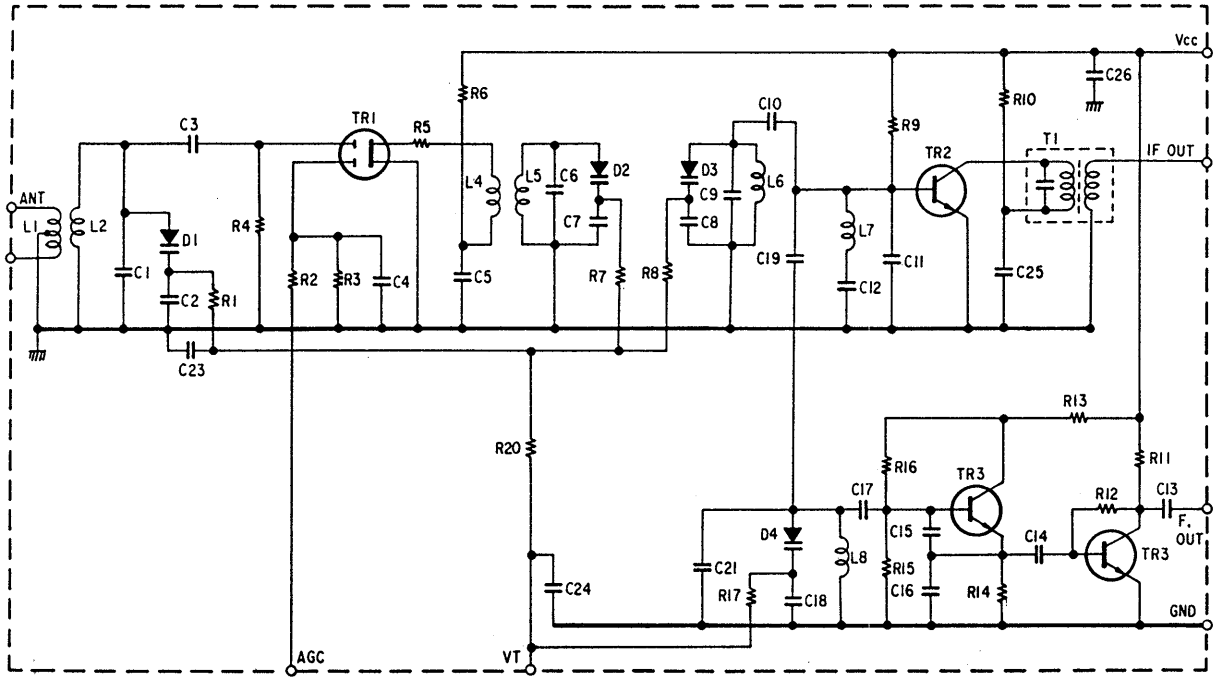


IC81 LC7218

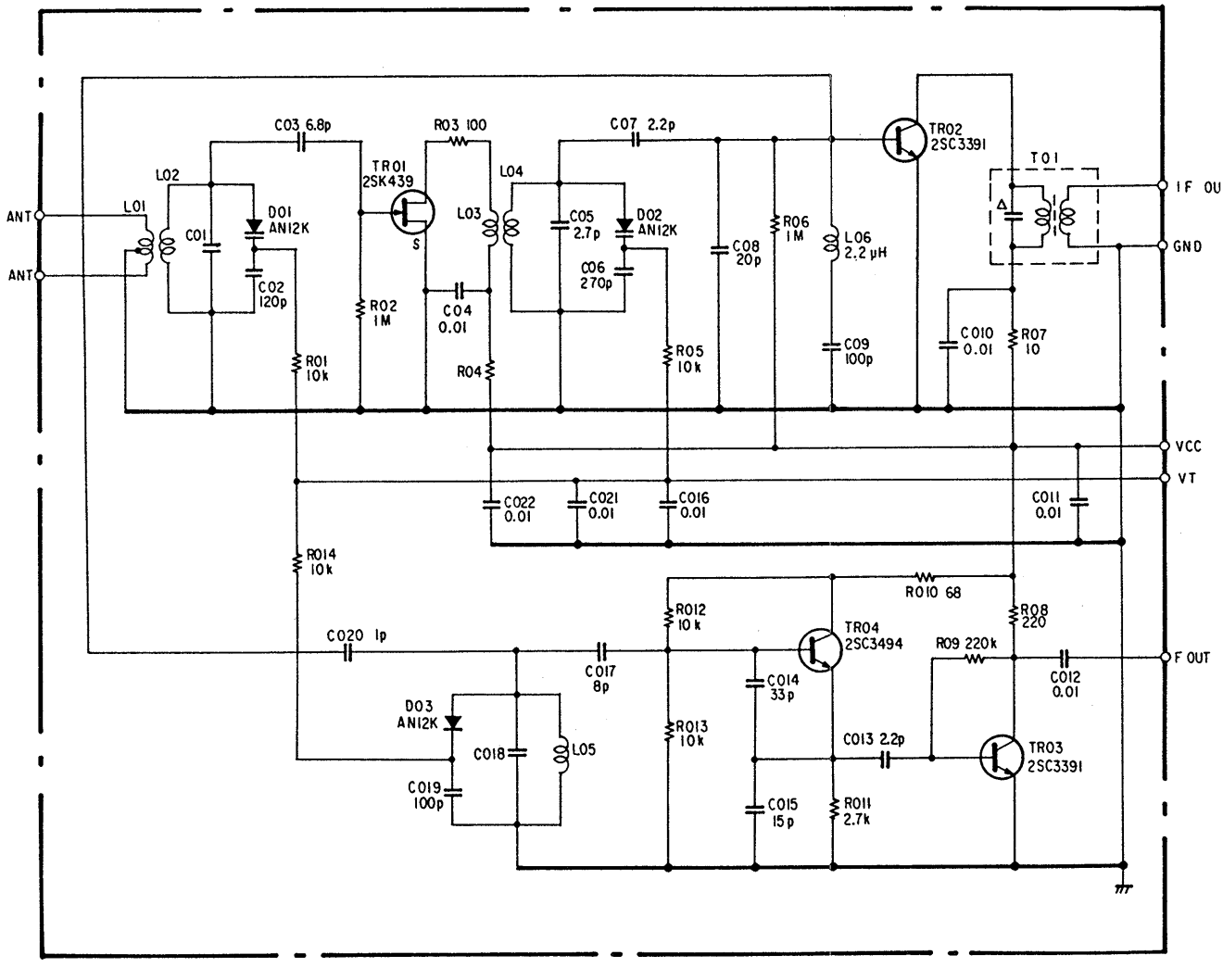


3-4. FM FRONT-END SCHEMATIC DIAGRAMS

FE1 (WG, IT Model)

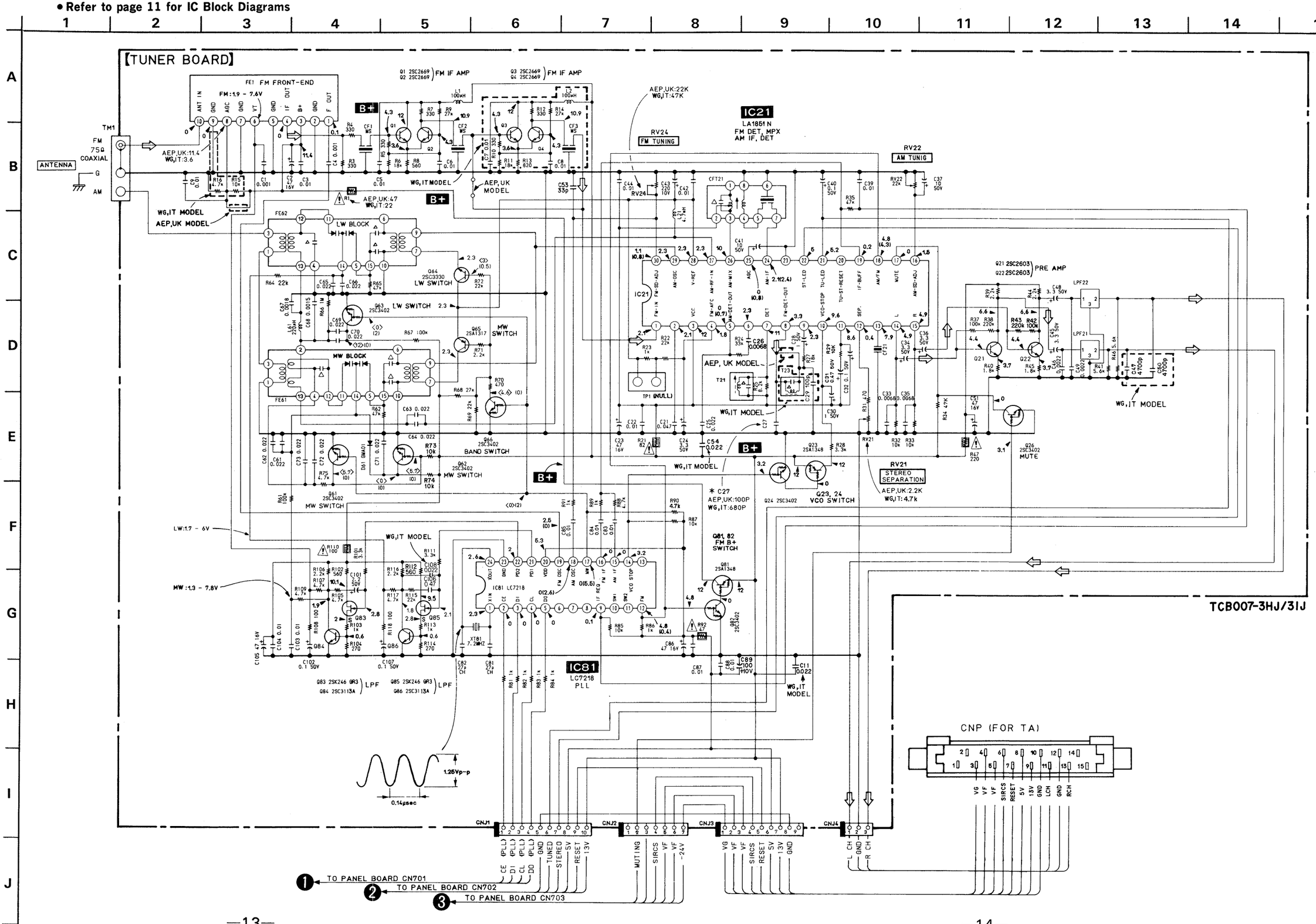


FE1 (AEP, UK Model)

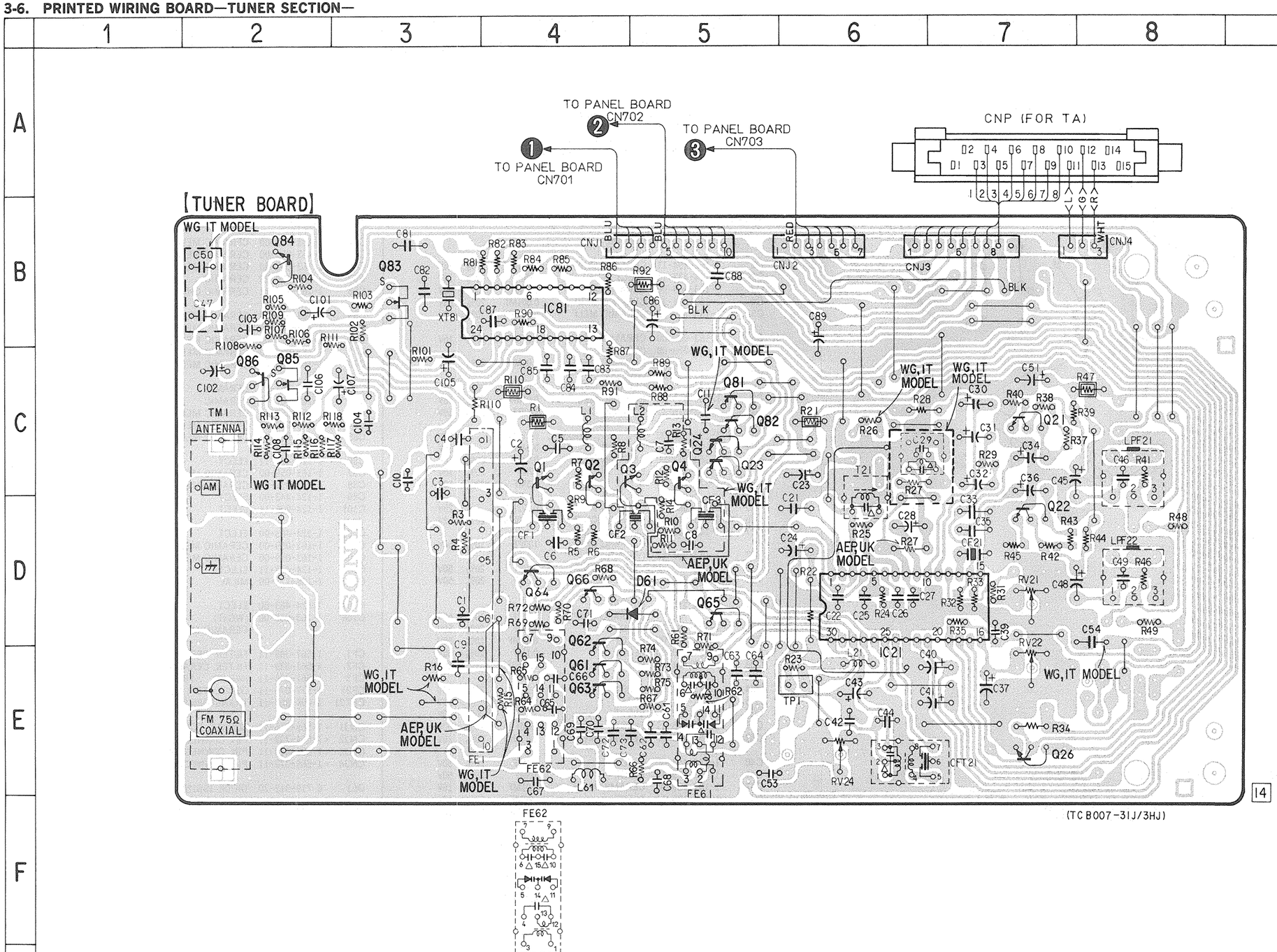


3-5. SCHEMATIC DIAGRAM—TUNER SECTION—

• Refer to page 11 for IC Block Diagrams



3-6. PRINTED WIRING BOARD—TUNER SECTION—



14

• **Semiconductor Location**

Ref. No.	Location
D61	D-5
IC21	D-6
IC81	B-4
Q1	C-4
Q2	C-4
Q3	C-5
Q4	C-5
Q21	C-7
Q22	D-7
Q23	C-5
Q24	C-5
Q26	E-7
Q61	E-4
Q62	E-4
Q63	E-4
Q64	D-4
Q65	D-5
Q66	D-4
Q81	C-5
Q82	C-5
Q83	B-3
Q84	B-2
Q85	C-2
Q86	C-2

Note:

- ○—— : parts extracted from the component side.
- [ ]— indicates side identified with part number.
- WG: West Germany Model
- IT: Itarian Model

Note:

- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4W or less unless otherwise specified.
- △ : internal component.
- ▭ : nonflammable resistor.

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

- ▭ : adjustment for repair.
- Power voltage is supply from TA-H300
- Voltage and waveforms are dc with respect to ground under no-signal (detuned) conditions.
  no mark: FM
  ( ): AM
  < >: LW
- Voltages are taken with a VOM (Input Impedance 10MΩ). Voltage variations may be noted due to normal production tolerances.
- Signal path.
  ⇨ : FM
- WG: West Germany Model
- IT: Itarian Model

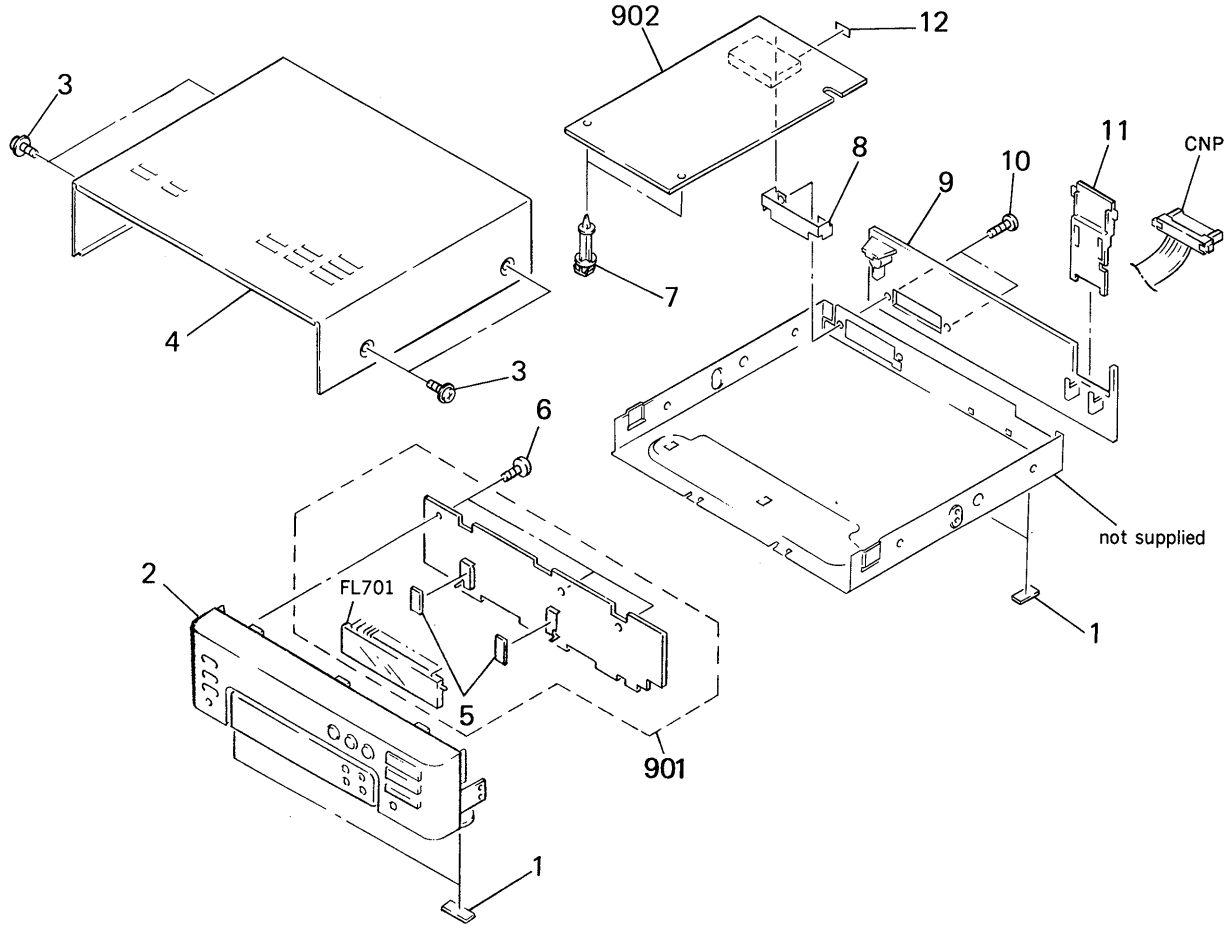
SECTION 4
EXPLODED VIEW

NOTE:

- The mechanical parts with no reference number in the exploded views are not supplied.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part number suffix -XX and -X may be different from the parts specified in the components used on the set.
- Color Indication of Appearance Parts
  Example:
  (RED) . . . KNOB, BALANCE (WHITE)
  ↑ Cabinet's Color ↑ Parts Color

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

- WG: West Germany Model
- IT: Itarian Model



Ref.No	Part No.	Description	Remarks
1	4-930-336-01	FOOT (FELT)	
2	X-4930-316-1	PANEL ASSY (EX), FRONT	
3	3-704-366-01	SCREW (CASE) (M3X8)	
4	4-932-844-11	CASE	
5	4-932-810-01	CUSHION (FL)	
6	7-685-534-19	SCREW +BTP 2.6X8 TYPE2 N-S	
7	*4-914-008-01	HOLDER, PCB	
8	*4-924-988-11	PLATE(ST), GROUND	
9	*4-930-346-01	PANEL (ST), BACK	
10	7-685-647-79	SCREW +BVTP 3X10 TYPE2 N-S	
11	*4-930-344-01	HOLDER (CONNECTION CORD)	
12	*4-612-009-01	(WG, IT)....SPACER (A)	
901	A-4334-654-A	(IT)....MOUNTED PCB, PANEL	
901	*A-4334-653-A	(AEP, UK, WG)....MOUNTED PCB, PANEL	
902	*A-4303-187-A	(AEP, UK)....MOUNTED PCB, TUNER (TCB007-3HJ)	
902	*A-4303-188-A	(WG, IT)....MOUNTED PCB, TUNER (TCB007-3IJ)	
CNP	1-575-679-11	CORD (WITH CONNECTOR)	
FL701	1-517-587-11	INDICATOR TUBE, FLUORESCENT	

SECTION 5
ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- If there are two or more same circuits in a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

CAPACITORS:
MF: μF, PF: μμF.

RESISTORS
- All resistors are in ohms.
- F: nonflammable

COILS
- MMH: mH, UH: μH

SEMICONDUCTORS
In each case, U: μ, for example:
UA...: μA..., UPA...: μPA..., UPC...: μPC, UPD...: μPD...

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

- WG: West Germany Model
- IT: Itarian Model

TUNER

Ref.No	Part No.	Description			
		CAPACITOR			
C1	1-162-294-11	CERAMIC CHIP	0.001MF	20%	25V
C2	1-124-477-11	ELECT	47MF	20%	16V
C3	1-163-059-00	CERAMIC MELF	0.01MF	20%	16V
C4	1-162-294-31	CERAMIC CHIP	0.001MF	20%	25V
C5	1-163-059-00	CERAMIC MELF	0.01MF	20%	16V
C6	1-163-059-00	CERAMIC MELF	0.01MF	20%	16V
C7	1-163-059-00	(WG,IT)....			
		CERAMIC MELF	0.01MF	20%	16V
C8	1-163-059-00	(WG, IT)....			
		CERAMIC MELF	0.01MF	20%	16V
C9	1-163-059-00	CERAMIC MELF	0.01MF	20%	16V
C10	1-162-516-11	CERAMIC CHIP	100PF	10%	50V
C11	1-101-005-00	(WG,IT)....CERAMIC	0.022MF		50V
C21	1-101-006-00	CERAMIC	0.047MF		50V
C22	1-163-059-00	CERAMIC MELF	0.01MF	20%	16V
C23	1-124-477-11	ELECT	47MF	20%	16V
C24	1-123-382-00	ELECT	3.3MF	20%	50V
C25	1-163-063-00	CERAMIC MELF	0.022MF		25V
C26	1-163-019-00	CERAMIC CHIP	0.0068MF	20%	12V
C27	1-162-516-11	(AEP,UK)....			
		CERAMIC CHIP	100PF	10%	50V
C27	1-163-007-11	(WG,IT)....			
		CERAMIC CHIP	680PF	20%	50V
C28	1-124-791-11	ELECT	1.0MF	20%	50V
C29	1-162-516-11	(WG,IT)....			
		CERAMIC CHIP	100PF	10%	50V
C30	1-124-791-11	ELECT	1.0MF	20%	50V
C31	1-124-902-00	ELECT	0.47MF	20%	50V
C32	1-124-463-00	ELECT	0.1MF	20%	50V
C33	1-130-481-00	FILM	0.0068MF	5%	50V
C34	1-123-382-00	ELECT	3.3MF	20%	50V
C35	1-130-481-00	FILM	0.0068MF	5%	50V
C36	1-123-382-00	ELECT	3.3MF	20%	50V
C37	1-123-875-11	ELECT	10MF	20%	50V
C39	1-163-059-00	CERAMIC MELF	0.01MF	20%	16V
C40	1-124-463-00	ELECT	0.1MF	20%	50V
C41	1-123-875-11	ELECT	10MF	20%	50V
C42	1-163-059-00	CERAMIC MELF	0.01MF	20%	16V
C43	1-126-176-11	ELECT	220MF	20%	10V
C44	1-163-059-00	CERAMIC MELF	0.01MF	20%	16V
C45	1-123-382-00	ELECT	3.3MF	20%	50V
C46	1-161-375-00	CERAMIC CHIP	0.0022MF	20%	25V
C47	1-163-170-00	(WG,IT)....			
		CERAMIC CHIP	0.0047MF	20%	25V
C48	1-123-382-00	ELECT	3.3MF	20%	50V
C49	1-161-375-00	CERAMIC CHIP	0.0022MF	20%	25V
C50	1-163-170-00	(WG,IT)....			
		CERAMIC CHIP	0.0047MF	20%	25V
C51	1-124-477-11	ELECT	47MF	20%	16V
C53	1-163-105-00	CERAMIC CHIP	33PF	5%	50V
C54	1-101-005-00	(WG,IT)....CERAMIC	0.022MF		50V
C61	1-163-063-00	CERAMIC MELF	0.022MF		25V
C62	1-163-063-00	CERAMIC MELF	0.022MF		25V
C63	1-163-063-00	CERAMIC MELF	0.022MF		25V
C64	1-163-063-00	CERAMIC MELF	0.022MF		25V
C65	1-163-063-00	CERAMIC MELF	0.022MF		25V
C66	1-163-063-00	CERAMIC MELF	0.022MF		25V
C67	1-102-120-00	CERAMIC	0.0018MF	10%	50V
C68	1-163-111-11	CERAMIC CHIP	0.0015MF	20%	25V
C69	1-163-063-00	CERAMIC MELF	0.022MF		25V
C70	1-163-063-00	CERAMIC MELF	0.022MF		25V
C71	1-163-063-00	CERAMIC MELF	0.022MF		25V
C72	1-163-063-00	CERAMIC MELF	0.022MF		25V
C73	1-163-063-00	CERAMIC MELF	0.022MF		25V
C81	1-102-961-00	CERAMIC	27PF	5%	50V
C82	1-102-961-00	CERAMIC	27PF	5%	50V
C83	1-163-059-00	CERAMIC MELF	0.01MF	20%	16V
C84	1-163-059-00	CERAMIC MELF	0.01MF	20%	16V
C85	1-163-059-00	CERAMIC MELF	0.01MF	20%	16V
C86	1-124-477-11	ELECT	47MF	20%	16V
C87	1-163-059-00	CERAMIC MELF	0.01MF	20%	16V
C88	1-163-059-00	CERAMIC MELF	0.01MF	20%	16V
C89	1-124-443-00	ELECT	100MF	20%	10V
C101	1-124-925-11	ELECT	2.2MF	20%	50V
C102	1-124-463-00	ELECT	0.1MF	20%	50V
C103	1-163-059-00	CERAMIC MELF	0.01MF	20%	16V
C104	1-163-059-00	CERAMIC MELF	0.01MF	20%	16V
C105	1-124-477-11	ELECT	47MF	20%	16V
C106	1-136-173-00	MILAL	0.47MF	5%	50V
C107	1-124-463-00	ELECT	0.1MF	20%	50V
C108	1-163-063-00	(WG,IT)....			
		CERAMIC MELF	0.022MF		25V
CF1	1-567-389-11	FILTER, CERAMIC			
CF2	1-567-389-11	FILTER, CERAMIC			
CF3	1-567-389-11	(WG,IT)....FILTER,CERAMIC			
CF21	1-577-075-11	OSCILLATOR, CERAMIC (19KHz)			
CFT21	1-404-853-11	TRANSFORMER,IF(CERAMIC FILTER)			
CNJ1	*1-568-276-11	SOCKET, CONNECTOR 10P			
CNJ2	*1-564-709-11	PIN, CONNECTOR (SMALL TYPE) 7P			
CNJ3	*1-568-419-11	PIN, CONNECTOR 9P			
CNJ4	*1-568-372-11	PIN, CONNECTOR 3P			
D61	8-719-912-20	DIODE 1SS120			
FE1	1-463-857-11	(WG,IT)....FRONT END (FM)			
FE1	1-463-862-21	(AEP,UK)....FRONT END, FM			
FE61	1-236-462-11	ENCAPSULATED COMPONENT (MW RF)			
FE62	1-236-463-11	ENCAPSULATED COMPONENT (LW RF)			
IC21	8-759-821-45	IC LA1851N			
IC81	8-759-820-91	IC LC7218			
L1	1-410-645-31	MICRO INDUCTOR 100UH			
L2	1-410-645-31	(WG,IT)....MICRO INDUCTOR 100UH			
L21	1-407-500-00	MICRO INDUCTOR 4.7MMH			
L61	1-410-525-11	MICRO INDUCTOR 220UF			
LPF21	1-235-164-00	FILTER, LOW PASS			
LPF22	1-235-164-00	FILTER, LOW PASS			
Q1	8-729-230-99	TRANSISTOR 2SC2669-OY			
Q2	8-729-230-99	TRANSISTOR 2SC2669-OY			

Ref.No	Part No.	Description				
Q3	8-129-230-99	(WG,IT)....TRANSISTOR 2SC2669-OY				
Q4	8-129-230-99	(WG,IT)....TRANSISTOR 2SC2669-OY				
Q21	8-729-119-78	TRANSISTOR 2SC2785-HFE				
Q22	8-729-119-78	TRANSISTOR 2SC2785-HFE				
Q23	8-729-900-61	TRANSISTOR DTA114ES				
Q24	8-729-900-80	TRANSISTOR DTC114ES				
Q26	8-729-900-80	TRANSISTOR DTC114ES				
Q61	8-729-900-80	TRANSISTOR DTC114ES				
Q62	8-729-900-80	TRANSISTOR DTC114ES				
Q63	8-729-900-80	TRANSISTOR DTC114ES				
Q64	8-729-820-24	TRANSISTOR 2SC3330-T				
Q65	8-729-820-10	TRANSISTOR 2SA1317-SU				
Q66	8-729-900-80	TRANSISTOR DTC114ES				
Q81	8-729-900-61	TRANSISTOR DTA114ES				
Q82	8-729-900-80	TRANSISTOR DTC114ES				
Q83	8-729-202-67	TRANSISTOR 2SK246GR3				
Q84	8-729-230-93	TRANSISTOR 2SC3113-AB				
Q85	8-729-202-67	TRANSISTOR 2SK246GR3				
Q86	8-729-230-93	TRANSISTOR 2SC3113-AB				

RESISTOR

R1	⚠1-249-397-11	(WG, IT).... CARBON (SMALL)	22	5%	1/4W	F
R1	⚠1-249-401-11	(AEP,UK).... CARBON (SMALL)	47	5%	1/4W	F
R3	1-249-329-11	CARBON MELF	330	5%	1/8W	
R4	1-249-329-11	CARBON MELF	330	5%	1/8W	
R5	1-249-329-11	CARBON MELF	330	5%	1/8W	
R6	1-249-350-11	CARBON MELF	18K	5%	1/8W	
R7	1-249-329-11	CARBON MELF	330	5%	1/8W	
R8	1-249-332-11	CARBON MELF	560	5%	1/8W	
R9	1-249-352-11	CARBON MELF	27K	5%	1/8W	
R10	1-249-329-11	(WG,IT).... CARBON MELF	330	5%	1/8W	
R11	1-249-350-11	(WG,IT).... CARBON MELF	18K	5%	1/8W	
R12	1-249-329-11	(WG,IT).... CARBON MELF	330	5%	1/8W	
R13	1-249-334-11	(WG,IT).... CARBON MELF	820	5%	1/8W	
R14	1-249-352-11	(WG,IT).... CARBON MELF	27K	5%	1/8W	
R15	1-249-347-11	(WG,IT).... CARBON MELF	10K	5%	1/8W	
R16	1-249-343-11	(WG,IT).... CARBON MELF	4.7K	5%	1/8W	
R21	1-249-404-00	CARBON (SMALL)	82	5%	1/4W	F
R22	1-249-433-11	CARBON (SMALL)	22K	5%	1/4W	
R23	1-249-335-11	CARBON MELF	1K	5%	1/8W	
R24	1-249-353-11	CARBON MELF	33K	5%	1/8W	
R25	1-249-346-11	CARBON MELF	8.2K	5%	1/8W	
R26	1-249-340-11	(WG,IT).... CARBON MELF	2.7K	5%	1/8W	
R27	1-249-432-11	CARBON (SMALL)	18K	5%	1/4W	
R28	1-249-423-11	CARBON (SMALL)	3.3K	5%	1/4W	
R29	1-249-347-11	CARBON MELF	10K	5%	1/8W	
R31	1-249-331-11	CARBON MELF	470	5%	1/8W	
R32	1-249-347-11	CARBON MELF	10K	5%	1/8W	
R33	1-249-347-11	CARBON MELF	10K	5%	1/8W	
R34	1-249-437-11	CARBON (SMALL)	47K	5%	1/4W	
R35	1-249-355-11	CARBON MELF	47K	5%	1/8W	
R37	1-249-359-11	CARBON MELF	100K	5%	1/8W	
R38	1-249-363-11	CARBON MELF	220K	5%	1/8W	
R39	1-249-339-11	CARBON MELF	2.2K	5%	1/8W	
R40	1-249-338-11	CARBON MELF	1.8K	5%	1/8W	
R41	1-249-344-11	CARBON MELF	5.6K	5%	1/8W	
R42	1-249-359-11	CARBON MELF	100K	5%	1/8W	

Ref.No	Part No.	Description				
R43	1-249-363-11	CARBON MELF	220K	5%	1/8W	
R44	1-249-339-11	CARBON MELF	2.2K	5%	1/8W	
R45	1-249-338-11	CARBON MELF	1.8K	5%	1/8W	
R46	1-249-344-11	CARBON MELF	5.6K	5%	1/8W	
R47	⚠1-249-409-11	CARBON (SMALL)	220	5%	1/4W	F
R48	1-249-359-11	CARBON MELF	100K	5%	1/8W	
R49	1-249-359-11	CARBON MELF	100K	5%	1/8W	
R61	1-249-359-11	CARBON MELF	100K	5%	1/8W	
R62	1-249-355-11	CARBON MELF	47K	5%	1/8W	
R64	1-249-351-11	CARBON MELF	22K	5%	1/8W	
R65	1-249-355-11	CARBON MELF	47K	5%	1/8W	
R66	1-215-493-00	CARBON MELF	1M	5%	1/5W	
R67	1-249-359-11	CARBON MELF	100K	5%	1/8W	
R68	1-249-352-11	CARBON MELF	27K	5%	1/8W	
R69	1-249-351-11	CARBON MELF	22K	5%	1/8W	
R70	1-249-331-11	CARBON MELF	470	5%	1/8W	
R71	1-249-339-11	CARBON MELF	2.2K	5%	1/8W	
R72	1-249-351-11	CARBON MELF	22K	5%	1/8W	
R73	1-249-347-11	CARBON MELF	10K	5%	1/8W	
R74	1-249-347-11	CARBON MELF	10K	5%	1/8W	
R75	1-249-343-11	CARBON MELF	4.7K	5%	1/8W	
R81	1-249-335-11	CARBON MELF	1K	5%	1/8W	
R82	1-249-335-11	CARBON MELF	1K	5%	1/8W	
R83	1-249-335-11	CARBON MELF	1K	5%	1/8W	
R84	1-249-335-11	CARBON MELF	1K	5%	1/8W	
R85	1-249-347-11	CARBON MELF	10K	5%	1/8W	
R86	1-249-335-11	CARBON MELF	1K	5%	1/8W	
R87	1-249-347-11	CARBON MELF	10K	5%	1/8W	
R88	1-249-343-11	CARBON MELF	4.7K	5%	1/8W	
R89	1-249-335-11	CARBON MELF	1K	5%	1/8W	
R90	1-249-343-11	CARBON MELF	4.7K	5%	1/8W	
R91	1-249-335-11	CARBON MELF	1K	5%	1/8W	
R92	⚠1-249-401-11	CARBON (SMALL)	47	5%	1/4W	F
R101	1-249-341-11	CARBON MELF	3.3K	5%	1/8W	
R102	1-249-332-11	CARBON MELF	560	5%	1/8W	
R103	1-249-335-11	CARBON MELF	1K	5%	1/8W	
R104	1-249-328-11	CARBON MELF	270	5%	1/8W	
R105	1-249-343-11	CARBON MELF	4.7K	5%	1/8W	
R106	1-249-339-11	CARBON MELF	2.2K	5%	1/8W	
R107	1-249-343-11	CARBON MELF	4.7K	5%	1/8W	
R108	1-249-323-11	CARBON MELF	100	5%	1/8W	
R109	1-249-343-11	CARBON MELF	4.7K	5%	1/8W	
R110	⚠1-249-405-11	CARBON (SMALL)	100	5%	1/4W	F
R111	1-249-341-11	CARBON MELF	3.3K	5%	1/8W	
R112	1-249-332-11	CARBON MELF	560	5%	1/8W	
R113	1-249-335-11	CARBON MELF	1K	5%	1/8W	
R114	1-249-328-11	CARBON MELF	270	5%	1/8W	
R115	1-249-351-11	CARBON MELF	22K	5%	1/8W	
R116	1-249-339-11	CARBON MELF	2.2K	5%	1/8W	
R117	1-249-343-11	CARBON MELF	4.7K	5%	1/8W	
R118	1-249-323-11	CARBON MELF	100	5%	1/8W	

RV21	1-238-013-11	(AEP,UK)....RES, ADJ, CARBON 2.2K
RV21	1-238-015-11	(WG,IT)....RES, ADJ, CARBON 4.7K
RV22	1-238-017-11	RES, ADJ, CARBON 22K
RV24	1-238-017-11	(AEP,UK)....RES, ADJ, CARBON 22K
RV24	1-238-019-11	(WG,IT)....RES, ADJ, CARBON 47K
T21	1-404-807-11	TRANSFORMER, DISCRIMINATOR
T23	1-236-465-11	(WG,IT)....ENCAPSULATED COMPONENT
TM1	*1-537-138-31	TERMINAL BOARD (ANTENNA)
TP1	*1-560-060-00	PIN, CONNECTOR 2P
XT81	1-577-126-11	VIBRATOR, CRYSTAL (7.2MHz)

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

EXCEPT FOR TUNER

Ref.No	Part No.	Description
901	A-4334-654-A	(IT)....MOUNTED PCB, PANEL
901	*A-4334-653-A	(AEP, UK, WG)....MOUNTED PCB, PANEL
902	*A-4303-187-A	(AEP,UK)....MOUNTED PCB, TUNER (TCB007-3HJ)
902	*A-4303-188-A	(WG, IT)....MOUNTED PCB, TUNER (TCB007-3IJ)

CAPACITOR

C701	1-125-486-11	DOUBLE LAYERS	0.22F		5.5V
C702	1-136-173-00	FILM	0.47MF	5%	50V
C703	1-162-306-11	CERAMIC	0.01MF	20%	16V
C704	1-126-094-11	ELECT	4.7MF	20%	25V
C705	1-162-200-31	CERAMIC	11PF	5%	50V
C706	1-162-200-31	CERAMIC	11PF	5%	50V
C707	1-136-173-00	FILM	0.47MF	5%	50V
C708	1-136-173-00	FILM	0.47MF	5%	50V
C709	1-164-159-11	CERAMIC	0.1MF		50V
C710	1-164-159-11	CERAMIC	0.1MF		50V

CB701	1-233-130-11	COMPOSITION CIRCUIT BLOCK
CB702	1-233-148-11	COMPOSITION CIRCUIT BLOCK
CB703	1-233-187-11	COMPOSITION CIRCUIT BLOCK
CB704	1-233-148-11	COMPOSITION CIRCUIT BLOCK
CN701	*1-568-279-11	SOCKET, CONNECTOR 4P
CN702	*1-568-281-11	SOCKET, CONNECTOR 6P
CN703	*1-568-281-11	SOCKET, CONNECTOR 6P
D701	8-719-912-20	(IT)....DIODE 1SS120
D702	8-719-912-20	(AEP, UK, WG)....DIODE 1SS120
D703	8-719-912-20	(IT)....DIODE 1SS120
D708	8-719-912-20	DIODE 1SS120
D709	8-719-912-20	DIODE 1SS120
D710	8-719-912-20	DIODE 1SS120
D712	8-719-912-20	DIODE 1SS120
D713	8-719-912-20	DIODE 1SS120
D714	8-719-912-20	DIODE 1SS120
D715	8-719-912-20	DIODE 1SS120
D716	8-719-912-20	DIODE 1SS120
D717	8-719-912-20	DIODE 1SS120
D718	8-719-912-20	DIODE 1SS120
D719	8-719-912-20	DIODE 1SS120
D720	8-719-912-20	DIODE 1SS120
D721	8-719-912-20	DIODE 1SS120
D722	8-719-912-20	DIODE 1SS120
D723	8-719-912-20	DIODE 1SS120
D724	8-719-912-20	DIODE 1SS120
FL701	1-519-517-11	INDICATOR TUBE, FLUORESCENT
IC701	8-759-239-79	IC TMP47C670N-1204
IC702	8-749-920-59	IC A1QH3020S
L701	1-410-521-11	INDUCTOR 100UH
L702	1-410-521-11	INDUCTOR 100UH
L703	1-408-080-00	INDUCTOR 100UH
L704	1-408-080-00	INDUCTOR 100UH
Q701	8-729-900-89	TRANSISTOR DTC144ES
Q702	8-729-900-89	TRANSISTOR DTC144ES
Q703	8-729-900-80	TRANSISTOR DTC114ES

Ref.No	Part No.	Description

RESISTOR

R701	1-249-405-11	CARBON	100	5%	1/4W
R702	1-249-438-11	CARBON	56K	5%	1/4W
R703	1-249-435-11	CARBON	33K	5%	1/4W
R704	1-249-429-11	CARBON	10K	5%	1/4W
R705	1-249-433-11	CARBON	22K	5%	1/4W
R706	1-249-438-11	CARBON	56K	5%	1/4W
R707	1-249-435-11	CARBON	33K	5%	1/4W
R708	1-249-441-11	CARBON	100K	5%	1/4W
R709	1-249-429-11	CARBON	10K	5%	1/4W
R710	1-249-429-11	CARBON	10K	5%	1/4W
R711	1-249-429-11	CARBON	10K	5%	1/4W
R712	1-249-429-11	CARBON	10K	5%	1/4W
R713	1-249-429-11	CARBON	10K	5%	1/4W
R714	1-249-429-11	CARBON	10K	5%	1/4W
R715	1-249-429-11	CARBON	10K	5%	1/4W
R716	1-249-429-11	CARBON	10K	5%	1/4W
R717	1-249-423-11	CARBON	3.3K	5%	1/4W
R718	1-249-429-11	CARBON	10K	5%	1/4W
R719	1-249-429-11	CARBON	10K	5%	1/4W
R720	1-249-429-11	CARBON	10K	5%	1/4W
R721	1-249-411-11	CARBON	330	5%	1/4W
R722	1-249-441-11	CARBON	100K	5%	1/4W
R723	1-249-441-11	CARBON	100K	5%	1/4W
R724	1-249-441-11	CARBON	100K	5%	1/4W
R725	1-249-441-11	CARBON	100K	5%	1/4W
R726	1-249-441-11	CARBON	100K	5%	1/4W
R727	1-249-421-11	CARBON	2.2K	5%	1/4W

RB701	1-233-125-11	COMPOSITION CIRCUIT BLOCK
S708	1-554-596-21	SWITCH, KEY BOARD (PRESET/TIME −)
S709	1-554-596-21	SWITCH, KEY BOARD (PRESET/TIME +)
S710	1-554-596-21	SWITCH, KEY BOARD (ENTER NEXT)
S711	1-554-596-21	SWITCH, KEY BOARD (STEREO/MUTING)
S713	1-554-596-21	SWITCH, KEY BOARD (MEMORY)
S714	1-554-596-21	SWITCH, KEY BOARD (SHIFT)
S715	1-554-596-21	SWITCH, KEY BOARD (BAND)
S717	1-554-596-21	SWITCH, KEY BOARD (TIME/FRQUENCY)
S718	1-554-596-21	SWITCH, KEY BOARD (TUNING +)
S719	1-554-596-21	SWITCH, KEY BOARD (TUNING −)
S720	1-554-596-21	SWITCH, KEY BOARD (CLOCK)
S721	1-554-596-21	SWITCH, KEY BOARD (TIMER CONTROL)
S722	1-554-596-21	SWITCH, KEY BOARD (TIMER SET)
S723	1-554-596-21	SWITCH, KEY BOARD (SLEEP)
S724	1-554-596-21	SWITCH, KEY BOARD (AUTO/MANUAL)
X701	1-567-821-21	VIBRATOR, CRYSTAL (4.19MHz)

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